

L 22721-66

ACC NR: AP6002932

motion. It is equipped with a fixed piston that permits air to pass but not oil. This piston has a shaft with a conduit for admitting the air and a valve for turning off the supply.

SUB CODE: 14, 13/ SUBM DATE: 22Apr64

Card 2/2 Jlf

TARNAVSKIY, Abram L'vovich; GURYLEV, Viktor Vasil'yevich; SHUROVSKIY  
Bronislav Boleslavovich; PERLIN, Ye.N., red. izd-va;  
ISLENT'YEVA, P.G., tekhn.red.

[Bimetal wire] Bimetallicheskaia provoloka. Moskva, Metal-  
lurgizdat, 1963. 123 p. (MIRA 16:7)  
(Laminated metals) (Wire)

~~SECRET, USA~~  
~~HURYLOVA, M.A.; VLASYUK, P.A., diyany chlen.~~

Study of the formation of the principal structural elements of ears of wheat.  
Dop.AN URSR no.5:355-361 '53. (MLR 6:10)

1. Akademiya nauk Ukrayins'koyi RSR (for Vlasyuk). 2. Instytut genetyky i  
selektsiyi Akademiyi nauk Ukrayins'koyi RSR (for Huryl'ova). (Wheat)

Guryleva, S. G. "The acceleration of laser by means of sinestral", Sbornik nauch. trudov (Rost. oblast. nauch.-issled. akushersko-ginekol. in-t), Issue 8, 1948, p. 127-34.

So: U-3261, 10 April 1953 (Letopis 'Zhurnal 'nykh Statey, No. 12, 1949).

SO: U-3261, 10 April 1953

Guryleva, S. G. "Changes in the globulin fraction of the blood in septic diseases", Sbornik nauch. trudov (Rost. obl. nauch.-issled. akushersko-ginekol. in-t), Issue 2, 1948, p. 147-55.

SO: U-3261, 10 April 1953 (Letopis 'Zhurnal 'nykh Statey, No. 12, 1949).

PUGOVKA, Leonid Konstantinovich [Puhauka, L.K.], Geroy sotsialisticheskogo truda, deputat Verkhovnogo Soveta SSSR; GURYN, M. [Hurya, M.], red.; KALECHYTS, G. [Kalechyt, H.], tekhn.red.

[We shall carry out the seven-year plan ahead of schedule] Siamihodku vykanaem daterminova. Minsk, Dziarzh. vyd-va BSSR. Red. sel'skashspadarchai lit-ry, 1961. 77 p. (MIRA 15:1)  
(Glubokoye District—Agriculture)

USSR/Cultivation. Flax - Technical, Oil, Linseed, Flaxseed oil. -7

Abs Jour : Vest Zem - Biol., No. 1, 1950, 59411

Author : Toker, I.Z., Guryevich, Y.A.

Inst : AS ESSR

Title : The Influence of Peat Soil, Soil on Health Improvement in Hybrid Forms of Flax.

Orig Pub : Izv. Akad. Nauk, Ser. Biol. N. 1957, No 2, 69-75.

Abstract : It is established in the basin of field and vegetation experiments that different varieties and hybrid of flax are not infected with fungus and bacterial diseases. Seeds collected from sick plants produced normal sprouts. Seeds collected from sick plants produced normal sprouts and a high yield of seeds and fiber when sown in peat-bog soil. Plants grown from such seeds showed no signs of disease. However, 100% infection of the plants with diseases, low germination, an abnormal growth and development

Card 1/2

- 113 -

USSR/Cultivated Plants. Technical, Oligojinous, Sacchariferous. 1-7

Abz. Jour. : Auf. Ener - Biol., No 3, 1950, 394L

and low yielding capacity were noted when such seeds were sown in a usual turf-pedogenic soil. -- A.M. Svirinov

Card 2/2

GURZADYAN, G. A. Cand. Physicomath. Sci.

Dissertation: "Radiation Equilibrium of Interstellar Gaseous Matter." Moscow  
Order of Lenin State U. imeni M. V. Lomonosov. 25 Sept. 1947

SO; Yechernaya Moskva, Sept. 1947 (Project #10836)

GURZADYAN, G.A.

$\lambda\lambda$ -radiation in interstellar space. Dekl. AN Arm. SSR 9 no. 4:151-155  
'48. (MLRA 9:10)

1. Byurakanskaya Astrofizicheskaya Observatoriya Akademii nauk Armyanskoy  
SSR, Yerevan. Predstavlene V.A. Ambartsumyanem.  
(Stars--Radiation)

GURZADYAN, G. A.

Gurzadyan, G. A. - "Gravitational equilibrium of interstellar hydrogen,"  
Astron. zhurnal, 1949, Issue 2, p. 104-09, - Bibliog: 11 items.

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'nyki Statey, No. 17, 1949).

GURZADYAN, G. A.

Stars -- Clusters

Kinematics of star associations. Soob. Biur. obs. No. 4, 1949

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

GURZADIAN, G. A.

"The Evolution of Stars of Type O," Astron. zhur., No.6, 1949

~~Byurakan~~ Byurakan Astrophysical Observatory, AS ArmSSR

GURZAYAN, L. A.

Gurzayan, L. A. "Spectral associations of Orion and Monoceros," Doklady (Akad. nauk Arm. SSR), vol. X, no. 1, 1949, p. 2-17, (Resume in Armenian), - Bibliog: 14 items.

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'nykh Statey, no. 16, 1950).

GURSALYAN, G. A.

Gursalyan, G. A. "The diffusion of instantaneous radiation," Doklady Akad. Nauk Arm. SSR, Vol. X, No. 2, 1949, p. 53-59, (Resume in Armenian).

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'Naykh Statey, No. 18, 1949).

GURZADYAN, G. A.

Gurzadyan, G. A. - "Two star associations in Sagittarius", Doklady (Akad. nauk Arm. SSR), Vol. X, No. 3, 1949, p. 107-10, (Resume in Armenian), - Bibliog: 5 items.

SO: U-4630, 16 Sept. 53, (Letopis 'Zhurnal 'nykh Statey, No. 23, 1949).

GURZADYAN, G.A.

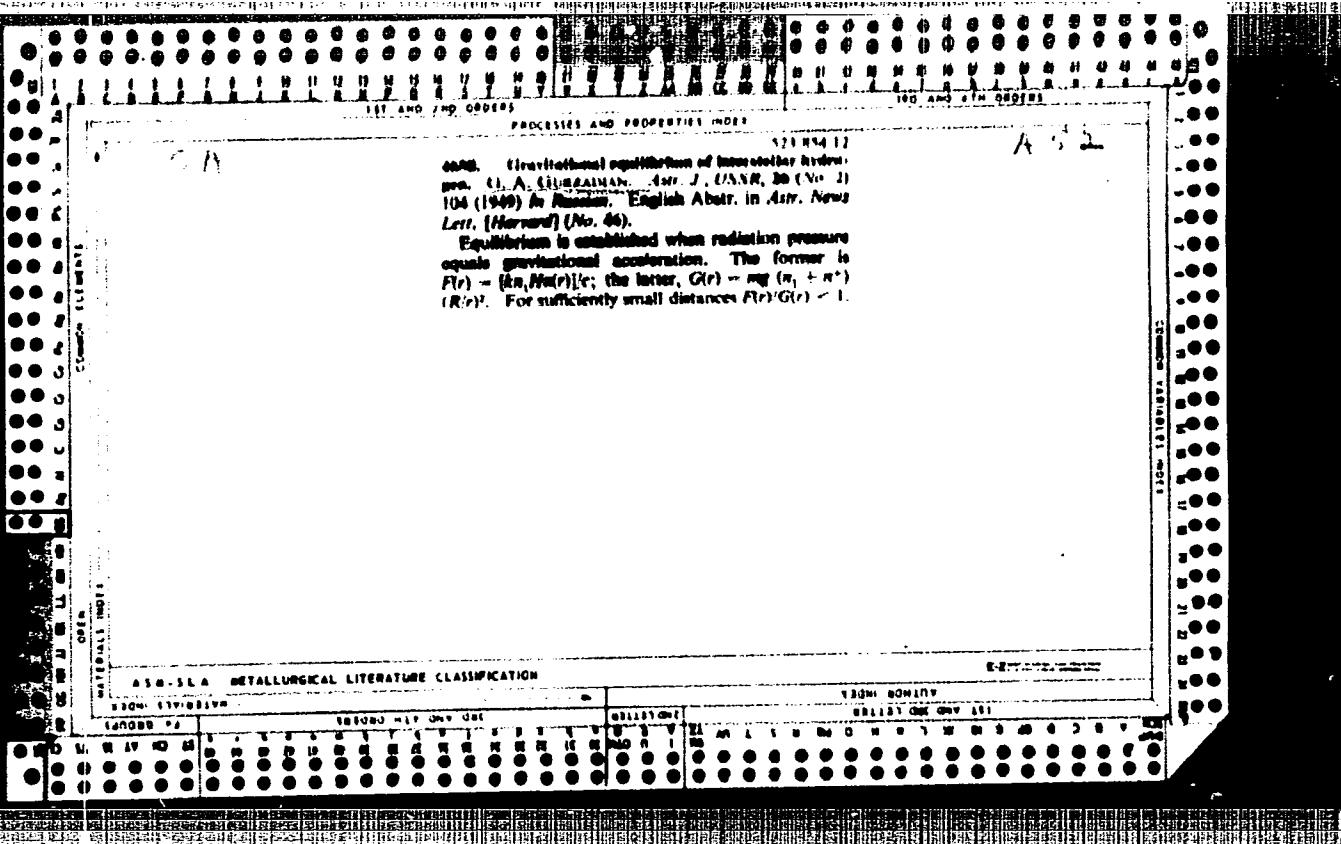
~~Order of the formation of stars in associations. Dokl.AN Arm.SSR~~  
10 no.4:153-159 '49. ~~(MIRA 9:10)~~

1. Byurakan'skaya Astrofizicheskaya Observatoriya Akademii nauk  
Armyanskoy SSR, Yerevan. Predstavлено V.A.Ambartsumyanom.  
(Stars--Clusters)

GURZADYAN, G.A.

Field of L -radiation in a medium of interstellar hydrogen around  
a moving star. Dekl. AN Arm. SSR 11 no. 2:53-57 '49. (MLRA 9:10)

1. Byurakan'skaya Astrofizicheskaya Observatoriya Akademii nauk  
Armen'skoy SSR. Predstavlene V.A. Ambartsumyanem.  
(Stars--Radiation)



GURZADYAN, G. A.

"On the Inference of the Law of Distribution of the Components of the Velocities of Natural Movements of Stars," Astron. Zhur., 26, No.3, 1949

Byurkan Astrophysical Observatory, AS Ar~~SSR~~

64

260

22 Dec 1980

16364162

APPROVED FOR RELEASE: 8

GURZADYAN, G. A.

USSR/ Mathematics - Theory  
Mathematics - Boundary Problem

Feb 49

"Lamb's Two-Dimensional Problem of an Infinitely  
Elastic Layer Bounded by Parallel Planes," G. A.  
Gurzadyan, Byurakan Astrophys. Obs Acad. Sci. USSR,  
4, 29

"Dok Ak Nauk SSSR" Vol LXV, No 6

Assumes boundary surface  $z = h$  of an isotropic,  
elastic layer remains free from tension, while  
a tension  $T_{zz}$ , independent of the variable, while  
is Cartesian coordinates, acts on the boundary.  
 $z = 0$ . Develops the picture of expansion in  
the layer of elastic waves  $u(z, s, t)$ , which  
are excited by unit, concentrated, at time  $s = 0$ ,  
separation of the variables. Uses method of partial  
Submitted by Acad V. I. Smirnov, 19 Nov 48.

29/49150

157T1

USSR/Astronomy - Stellar Association

11 Nov 49

"The Dynamics of Stellar Associations," C. A.  
Gurzadyan, Byurakan Astrophys Obs, Armenian  
Affiliate, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXIX, No 2

Asserts all stars and individual stationary systems  
found in state of association possess common origin,  
and are "fission" products of some primeval object,  
called a D-body. Submitted 12 Nov 49 by Acad S. I.  
Vavilov.

157T1

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000617520013-6

archive

Letter to the editor from A. Margaryan. Astron. chur., 29, no. 1, 1952. ref.  
36 Nov. 1951

Monthly List of Russian Accessions, Library of Congress, May 1952. UNCLASSIFIED.

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000617520013-6"

GURZADYAN, G. A.

USSR/Astronomy - Nebulae, Diffuse Mar/Apr 52

"Problem of the Genesis of Diffuse Nebulae,"  
G.A. Gurzadyan, Byurakan Astrophys Obs, Acad Sci  
Armenian SSR

"Astron Zhur" Vol XXIX, No 2, pp 120-134

Asserts that the formation of diffusive gaseous nebulae occurs in connection with the formation of stars. Discusses hypothesis of the generation of gas from dust particles; spatial distribution of gaseous nebulae; distribution of nebulae according to the type of stars illuminating them;

detg the relative quantity of gaseous and dust clouds in the Galaxy; nature of the connection between nebulae and illuminating stars; connection between nebulae and T-assns; and the origin of diffuse nebulae. Submitted 20 Aug 51.

216 T 60

GURZADYAN, G. A.

Gurzadyan, G. A. -- "Problem of Dynamics of Planetary Nebulae." Dr Phys-Math Sci,  
Leningrad State U, Yerevan 1953. (Referativnyy Zhurnal--Astronomiya  
Jan 54)

SO: SUM 168, 22 July 54

GURGADYAN, G. A.

"Stationary Shape of Ejected Gaseous Stellar Shells," Izv. Akad. ArmSSR, ser. fiz.-mater. yestestv. i tekhn. n., 6, No 2, 1953, pp 19-42.

This case is discussed using two-dimensional geometry without consideration of compressibility. The coordinate system moves with the shell, the x axis directed along the exterior boundary and the y axis perpendicular to it. Results show that an unevenness in the exterior boundary disturbs the equilibrium. Criteria of disruption of the shell are given. (RZhAstr, No 4, 1955)

BU: SWR, RU. 500, U 8M 55

GURZADYAN, G. A.

"Hydrodynamics of Ejected Gaseous Stellar Shells," Izv. Ak. ArmSSR, Ser. fiz.-matem. yestestv. i tekhn. n., 6, 3, 1953, pp 53-63

Author applies his theory of stability of shells expanding into interstellar space to planetary nebulae and to shells of Wolf-Rayet stars. His results show that the stability radius of planetary nebulae exceeds their actual radius, accounting for their regular shape, while the stability radius of shells of novae is small, which explains the vanishing of ejected gases and the improbability of formation of planetary nebulae. (RZhAstr, No 4, 1955)

SO: Sum. No. 568, 6 Jul 55

GURZADYAN, G. A.

Jul/Aug 53

USSR/ Astronomy - Nebulae

"Nature of Double-shell Planetary Nebulae," G. A. Gurzadyan, Byurakan Astrophys Observatory, Acad Sci Georgian SSR

Astr Zhur, Vol 30, No 4, pp 383-390

Describes a structural peculiarity of planetary nebulae consisting of twofold shells and attempts to prove incongruity of the presently approved assumption that the 2 shells originate from consecutive explosions of central star. Describes basic properties of double-shell nebulosities. Received 26 Dec 52.

262T26

GURZADYAN, G. A.

Sep/Oct 53

USSR/Astronomy - Nebulae, Spiral

"Spiral-Type Planetary Nebulae," G. A. Gurzadyan, Byurakan Astrophys Observatory, Acad Sci USSR

Astron Zhur, Vol 30, No 5, pp 487-494

Analyzes formation of subject planetary nebulae illustrated in photographs of H. Curtis, Publ Lick Observatory 13 (1918). Derives eqs of gaseous stream and thereafter adds slowing-down factors of resisting medium and attraction by core. Intends to apply this calcn to particular cases in a future article. Received 28 December 52.

Source #264T68

GURZADYAN, G. A.

USSR/Astronomy - Nebulae, Planetary Nov/Dec 53

"Nature of Anomalous Planetary Nebulae," G.A.  
Gurzadyan, Byurakan Astrophys Observ, Acad Sci  
USSR

Astron Zhur, Vol 30, No 6, pp 593-602

Attempts to apply results acquired previously  
(Astron Zhur 30,487 (1953)) to all subdivisions  
of nebulae: spiral, Z-shaped and helical. In-  
dicates possibilities of revealing unknown nature  
of some anomalous planetary nebulae. Rec 26 Dec  
1952.

273T7C

GURZADYAN, G.A.; MIRZOYAN, L.V., redaktor; ARZUMANYAN, G.A., redaktor;  
KAPLANYAN, M., tekhnicheskiy redaktor

[Problems in the dynamics of planetary nebulae] Voprosy dinamiki  
planetarnykh tumannosteii. Erevan, Izd-vo AN Armianskoi SSR, 1954.  
210 p.  
(Nebulae) (MIRA 9:2)

GURZADYAN, G.A.

Universal microphotometer Byurakan Observatory. Soob.Biur.obser.  
No.14:11-25 '54. (MLRA 8:10)  
(Microphotometer)

GURZADYAN, G rikor Aramovich

GURZADYAN, Grikor Aramovich (Byurokan Astrophysical Observatory Acad Sci Armenian SSR), Academic degree of Doctor of Physico-Mathematical Sciences, based on his defense, 13 June 1955, in the Council of the Leningrad Order of Lenin State U imeni Zhdanov, of his dissertation entitled: "Problems of dynamism of planetary nebulae."

For the Academic Degree of Doctor of Sciences

Byulleten' Ministerstva Vysshego Obrazovaniya SSSR, List No.7, 31 March 1956  
Decision of Higher Certification Commission Concerning Academic Degrees and Titles.

JPRS 512

CHURCHMAN, G. A.

*37*  
Spectroscopic properties of the Orion nebula. G. A. Churchman. *Trudy All-Union Astronomical Observatory, Astronomicheskii Institut S.S.R.* 1955, No. 10, 3-40. *Reprinted from Soviet Astronomer* 1957, No. 1187. An analysis of 12 spectra of the nebula taken in a region up to 11 arc sec from the center of the nebula showed that the intensity decreased as the distance from the exciting star increased and that the intensity increased with shorter the wave length. The data are interpreted as follows. Since the ionization potential for O<sup>2+</sup> is much greater than that for H(I) then at great distances from the exciting star there should be a significant decrease in the amount of O<sup>2+</sup> ions and consequently a relatively strong decrease in the intensity  $N_1 + N_2$ . J. Rother Lefevre.

GURZADYAN, G.A.

Radiation pressure upon interstellar gas. Astron. zhur. 32 no.5:425-  
431 S-0 '55. (MIRA 9:1)

1. Byurakanskaya astrofizicheskaya observatoriya Akademii nauk Arm.  
SSR. (Stars--Radiation) (Gases, Interstellar)

GURZADYAN, Grigor Aramovich; MIRZABEKYAN, E.G., otvetstvennyy redaktor;  
KAPLANYAN, M.A., tekhnicheskiy redaktor

[Radioastrophysics] Radioastrofizika. Erevan, Izd-vo Akad. nauk  
Armianskoi SSR, 1956. 267 p. (MLRA 10:5)  
(Astrophysics) (Radio astronomy)

GURZADYAN, G.A.

Balmer decrement of some diffuse nebulae. Soob. Biur. obser.  
no. 18:3-14 '56. (MLRA 9:12)  
(Nebulae) (Spectrophotometry)

GURZADYAN, G.A.

Temperature of nuclei of planetary nebulae. Soob. Biur. obser. no.18:  
15-27 '56. (MLRA 9:12)  
(Nebulae) (Stars--Temperature)

GURZADYAN, G. A.

"The Second Self-Recording Microphotometer of the Byurakan Observatory," by G. A. Gurzadyan, Soobshch. Byurakansk. observ.  
AN ArmSSR, Issue 18, 1956, pp 29-32 (from Referativnyy Zhurnal  
-- Astronomiya, Geodeziya, No 2, Feb 57, Abstract No 1100 by  
N. F. Kuprevich)

Based on the objective photometer (GOI) of Prokof'yev design, a self-recording microphotometer was constructed for the self-recording of spectrograms in the blackening scale. The optical part of this photometer is somewhat different: instead of two light beams, only one is left, covered by a cellophane film with a rectangular aperture in the middle. The light scattered from the cellophane film is of a dark red color to which the selenium photoelement is not responsive. The scattered light replaces the second beam and illuminates the photoplate while it is placed in the photometer. The area to be measured is set into the aperture and one proceeds in the usual way. The recording is made, on oscillographic paper 40 m long and 12 cm wide, by means of a mirror galvanometer, type M21, with a time constant of 3.9 sec. The equipment is supplied with current from the alternating network current and the voltage is stabilized by a stabilizer.

(U)

Sum. 1360

GURZADYAN, G. A

"Electrophotometric Planimeter", by G. A. Gurzadyan, Sobshch. Elyuransk. observ. AN ArmSSR, Issue 18, 1956, pp 33-41 (from Referativnyy Zhurnal -- Astronomiya, Geodeziya, No 2, Feb 57, Abstract No 1101 by N. N. Mikhel'son)

The electrophotometric planimeter measures the light flux proportional to the measured area. For this end, the light flux of a lamp is passed through a diaphragm cut out in paper according to the shape of the measured figure. Behind this diaphragm, a lens gathers light on the selenium photoelement. The photo flux is measured by the galvanometer. The practical error usually does not exceed 1%. (U)

54M.1360

GURZADYAN, G.A.

Polarization spectrophotometry of the Orion nebula. Soob. Biur. obser.  
no.20:23-44 '56. (MIRA 10:6)  
(Nebulae) (Spectrophotometry)

GUZ, V.L. G.A.

Determining the atmospheric density of the moon using solar  
radio emission. Izv.AN Arm.SSR.Ser.fiz.-mat.nauk 10 no.2:55-74  
'57. (MLA 10:2)

I. Byurakanskaya astrofizicheskaya observatoriya Akademii nauk  
Armeniyskoy SSR.

(Soon) (Radio astronomy)

GURZADYAN, G.A.

Possibility of studying uninterrupted emission by planetary nebulae. Dokl. AN Arm.SSR 24 no.2:53-59 '57. (MLRA 10:4)

1. Byurakaneskaya astrofizicheskaya observatoriya Akademii nauk Armyanskoy SSR. Predstavлено V. A. Ambartsumyanom.  
(Nebulae)

GURZADYAN, G. A.  
GURZADYAN, G.A.

Planetary ring nebulae [with summary in English]. Astron. zhur.  
34 no.6:820-826 N-D '57.  
(MIRA 11:2)

1. Byurakanskaya astrofizicheskaya observatoriya AN ArmSSR.  
(Nebulae)

AUTHOR GURZADYAN G.A.  
TITLE On the Structure of Planetary Nebulae.  
PERIODICAL (O strukture planetarnykh tumannostey -Russian)  
Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 5, pp 1013-1015 (U.S.S.R.)  
Received 6/1957  
Reviewed 7/1957  
ABSTRACT First, the problem itself is described in short. What is, however, needed is reliable proof of the existence typical of "planetary nebulae", which is of great importance for the dynamics of planetary nebulae. For this reasons, and also because of the solution of some other problems connected with the development and creation of these nebulae, the author took a series of pictures of planetary nebulae with the 700 mm meniscus telescope (first focal length 2100 mm, second - 10500 mm) of the astrophysical observatory of ABASTUMAN. He used AGDA -Astro- plates and photographed the planetary nebula NGC 2371-2 with an exposure of two hours. Also on the author's photograph the remains of the second shell observed by Curtis, Publ. Lick Obs., 13 (1917) are visible.  
In order to prove the actual existence of a "planetary" nebula (i.e. one with one shell), it suffices, conditions otherwise being the same, to photograph a planetary nebula the surface brightness of which is of the order of that of the two-shell nebula NGC 2371 - 2. For the purpose of convincing proof it is best to choose such a nebula, the surface brightness or RE (relative exposure) of which is greater by from 1 to 2 orders than that of NGC 2371 - 2.  
Card 1/2

## On the Structure of Planetary Nebulae.

PA - 3050

In confirmation of this assumption the planetary nebulae NGC 6572 and NGC 3568 were photographed after an exposure of 1 hour. On this occasion no signs of a second shell were noticed. This lack may be taken as real. From few but characteristic examples the following provisional conclusion may be drawn: The spatial spherical structure is the basic shape of all planetary nebulae. Therefore the gaseous matter probably emanates from the entire surface of the central object, although there may be some local areas with particularly intense exudation. All coils and spirals are second rate details.

ASSOCIATION  
PRESENTED BY **Astrophysical Observatory BYURAKAN of the Academy of Science of the Armenian  
AMBARTSUMIAN V.A., Member of the Academy** SSR.  
SUBMITTED 15.12.1956  
AVAILABLE Library of Congress  
Card 2/2

20-6-12/59

AUTHOR:

GURZADYAN, G.A.

TITLE:

The Magnetic Fields in the Planetary Nebulae.

(Magnitnyye polya v planetarnykh tumannostyakh. Russian).

PERIODICAL:

Doklady Akademii Nau SSSR, 1957, Vol 113, Nr 6, pp 1231 - 1234  
(U.S.S.R.)

ABSTRACT:

According to the at present available results of investigations, the electromagnetic forces play a very considerable rôle in the dynamics of the planetary nebulae. Some particular features of the structure of these nebulae can be explained, if the existence of magnetic fields is taken into account. The paper under review lists some examples for this assertion. Two photographs show typical representatives of bipolar planetary nebulae: NGC 7026 and the nameless 16h 10min, 5 - 54<sup>0</sup>50'. Of 100 well photographed planetary nebulae, 25 have a distinct bipolar structure and 10 nebulae (among them also NGC 6720 in the Lyra, and NGC 7293 in the Aquarius) have intensified brightness at the ends of the small axis. Half of the planetary nebulae have a bipolar structure. So far not a single planetary nebula with one or three 'caps' has been observed. It is exactly these distinct twin properties of these nebulae which support the assumption that there exists a connection between the 'caps' and the effects of a magnetic field. There exist three possibilities of explaining this phenomenon: The first possibility is connected with a possible

Card 1/3

The Magnetic Fields in the Planetary Nebulae. 20-6-12/59

effect of the general magnetic field of the Galaxy on the strongly ionized matter of the nebulae. This effect is in a position to cause a certain new distribution of the matter of the nebulae. With respect to the equator of the Galaxy, the 'caps' of the bipolar planetary nebulae are oriented in a completely arbitrary fashion. But different facts support the assumption that the general magnetic field of the Galaxy plays no essential role in the dynamics of the planetary nebulae. The second possibility is connected with the following phenomenon: The central nuclear star can have a dipole-like magnetic field the lines of force of which condense in two oposite directions on the surface of the star. The paper under review lists the objections against this interpretations. The third and most acceptable possibility is as follows: The magnetic field can be carried away with that matter which is liberated in some way from the central nucleous (and this is also the origin of the planetary nebula). This mechanism is explained in the paper under review. (2 reproductions, 1 chart).

Card 2/3

20-6-12/59

The Magnetic Fields in the Planetary Nebulae.

ASSOCIATION: Astrophysical Observatory Byurakansk, Academy of Sciences of the  
U.S.S.R.  
PRESENTED BY: AMBARTSUMYAN, V.A., Member of the Academy, on 19 December 1956  
SUBMITTED: 15 December 1956  
AVAILABLE: Library of Congress

Card 3/3

GURZADYAN, G.A.

Dynamics of planetary nebulae [with summary in English]. Vop.kosm.  
6:157-210 '58. (MIRA 11:10)  
(Nebulae) (Cosmic physics)

GURZADYAN, G.A.

Mature of magnetic fields in planetary nebulae. Soob.Biur.  
obser. no.24:33-57 '58. (MIRA 11:12)  
(Nebulae) (Magnetic fields)

GURZADYAN, G.A.

Electromagnetic nature of spiral planetary nebulae. Soob.  
Biur. obser. no. 24:59-72 '58. (MIRA 11:12)  
(Nebulae)

GURZADYAN, G.A.

Problem of the age of nuclei of planetary nebulae. Soob.  
Biur. obser. no. 25:101-118 '58. (MIRA 11:12)  
(Nebulae)

3(1)

SOV/33-35-4-2/25

AUTHOR: Gurzadyan, G.A.

TITLE: A Remark on the Intensity Variation of  $\lambda$  4363 [O III] in the Spectrum of the Planetary Nebula IC 4997 (Zamechaniiye po povodu izmeneniy intensivnosti  $\lambda$  4363 [O III] v spektre planetarnoy tumannosti IC 4997)

PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 4, pp 520-523 (USSR)

ABSTRACT: The author shows that the decrease of the relative intensity of the spectral line mentioned in the title for the planetary nebula IC 4997 is the result of a decreasing electron temperature in the nebula. This follows from a cooling of the nucleus of the nebula.

There are 1 table, and 6 references, 4 of which are Soviet, and 2 American.

ASSOCIATION: Byurakanskaya astrofizicheskaya observatoriya AN Armyanskoy SSR (Byurakan Astrophysical Observatory AS Armenian SSR)

SUBMITTED: September 18, 1957

Card 1/1

AUTHOR:

Gurzadyan, G. A.

20-118-5-10/59

TITLE:

Radio Interference Phenomena Due to the Ionosphere of the Moon (Radiointerferentsionnyye pheomeniya, vyzvannyye ionosferoy luny)

PERIODICAL:

Doklady Akademii Nauk SSSR, 1956, Vol. 110, No. 5,  
pp. 884-887 (USSR)

ABSTRACT:

Beside the refraction of the radio waves in the atmosphere (ionosphere) of the moon certain phenomena with interference character are observed on certain conditions. They are due to the fact that two radio waves emanated from a certain element of the sun's surface reach the observer by two different paths the one directly, the other through the ionosphere of the moon. According to the ratio of the difference of the optical paths of two rays to the wave length the signal received is either intensified or weakened. The quantitative analysis of this phenomenon leads to several interesting phenomena which are discussed here. The optical path of the second ray is because of the low density of the moon's ionosphere approximately equal

Card 1/4

Radio Interference Phenomena Due to the Ionosphere of the Moon 10-118-5-10/59

to the direct optical path which of course considerably simplifies the term for the path difference of the two rays. Terms for this path difference and for its maximum value are explicitly given here. The maximum path difference increases here with increasing refraction angle  $\alpha$ . The total radiofrequency radiation of the sun practically cannot furnish an interference figure neither in the case of great nor in the case of small refraction angles. This is different if local and especially point sources of radiofrequency radiation of the sun are investigated, the interference of such sources can be detected because of their comparatively great intensity. In many point sources the interference term in the mean increases with decreasing band width. The smaller the region in the vicinity of the lunar limbs, where the sources are concentrated, the greater is the increase of the radiofrequency radiation. At a certain moment these sources will be covered by the moon, therefore a great increase of the radio frequency radiation. Thus considerable fluctuations of the radiofrequency radiation are found. The refraction due to the ionosphere of the moon and the inter-

Card 2/4

Radio Interference Phenomena Due to the Ionosphere of the Moon 20-118-5-10/59

ference of the radiofrequency waves emanated by solar point sources intensifies the fluctuations of the radiofrequency radiation before and after a solar eclipse. Equally great fluctuations of a source increase with the decrease of the angular dimensions of this source; thus the fluctuations caused by extended sources are smaller. The magnitude of the fluctuations is different in the case of different wave lengths and increases in general with increasing wave length. The study of these fluctuations will for its part make possible the determination of the dimensions and the radiation output of the point sources of the radiofrequency radiation of the sun.

There are 2 figures and 7 references, 4 of which are Soviet

ASSOCIATION: Byurakan'skaya astrofizicheskaya observatoriya  
(Byurakan Astrophysics Observatory)

Card 2/4

6  
Soviet Interference Patterns Due to the Hungarian Revolt - 1956-57-68-5-10/89

PRESENTED: September 6, 1977, by C. A. Johnson, CIA, to the Agency.  
by S. S. Greene, USSR

SUBMITTED: At Oct 26, 1977

On file 4/4

AUTHOR:

Gurzadyan, G. A.

20-118-6-12/43

TITLE:

A "Lunar Radiointerferometer" ("Lunyy" radiointerferometr)

PERIODICAL:

Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 6,  
pp. 1094-1097 (USSR)

ABSTRACT:

The ionosphere of the moon or simply the moon plays under certain here given conditions the rôle of the second antenna or of the sea surface. Such an interferometer is here referred to as "lunar interferometer" for convenience; it has a great dissolving power and is therefore a very important aid for the determination of the angular dimensions of very small discreet sources of the cosmic radio radiation. The present paper gives fundamental considerations concerning the operation mode of a "lunar interferometer" and concerning the method for the determination of the angular dimensions of the discreet sources. The capacity of breaking the radio-waves of the moon ionosphere is characterized here by the "total angle of refraction".  $\varphi_0$ . A radiowave of a cosmic source which is within this angle will propagate to the earth directly as well as through the ionosphere of the moon.  $\varphi_0$

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20-118-6-12/43

## A. "Lunar Radiointerferometer"

depends on the concentration of the electrons in the ionosphere (and thus on the activity of the sun), and on the wave length.  $\varphi_0$  is measured in minutes and possibly even in tenth-minutes for ultra short waves. The cosmic source is for the sake of simplicity assumed to be rectangular with the width  $\beta$ . First a formula for the total intensity absorbed by the surface of the source is given, it comprises the range from  $\varphi = 0$  to  $\varphi = \varphi_0$ . With this term a curve for the behavior of the intensity can be constructed from the moment of the occurrence of the interference figure (when the source is at the limit  $\varphi = \varphi_0$ ) up to its complete vanishing. The result of the calculation yields a harmonic oscillation with variable amplitude, i.e. beat. The amplitude is not only a function harmonically dependent on  $\varphi$ , but also a monotonously decreasing function of the same  $\varphi$ . Therefore the interference figure has to be assumed as the curve of a damped beat, in the case of the moon interferometer. Various details concerning this interference figure follow.

Card 2/3

A "Lunar Radiointerferometer"

20-118-6-12/43

There are 2 figures and 2 references, which are Soviet

ASSOCIATION: Byurakanskaya astrofizicheskaya observatoriya Akademii nauk  
ArmSSR (Byurakan Observatory for Astrophysics, AS Armenian  
USSR)

PRESENTED: September 6, 1957, by V. A. Ambartsumyan, Member, Academy of  
Sciences USSR

SUBMITTED: August 24, 1957

Card 3/3

AUTHOR: Gurzadyan, G.A. (Byurakan) 20-120-4-13/67

TITLE: Magnetic Dipole Field in Planetary Nebulae (Dipol'noye magnitnoye pole v planetarnykh tumannostyakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 4, pp 734-737 (USSR)

ABSTRACT: In [Ref 1] the author showed the existence of magnetic fields in planetary nebulae. Now it is stated that these fields are similar to the field of a magnetic dipole. These dipoles are of not punctiform type, i.e. the measurements of the dipole (distance between equal charges of different sign) and the measurements of the planetary nebula are comparable. The voltage in the point  $(r, \varphi)$  is given by the formula  $H(r, \varphi) = a \cdot \gamma_1(r, \varphi)$ , where  $a$  is the magnetic moment of the dipole and

$$\gamma_1(r, \varphi) = \frac{2^{5/2} x^2 \left\{ (1+x^2)^2 - 4x^2 \sin^2 \varphi + (1-x^2) \left[ (1+x^2)^2 - 4x^2 \sin^2 \varphi \right]^{1/2} \right\}^{1/2}}{(1+x^2)^2 - 4x^2 \sin^2 \varphi}$$

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Magnetic Dipole Field in Planetary Nebulae

20-120-4-13/67

$$\text{where } x^2 = \frac{1^2}{4r^2}.$$

The conclusions resulting from this formula are discussed in detail, whereby several experimental results obtain an evident interpretation. Many conclusions are already contained in the numerous papers formerly published by the author [Ref 1,4,5]. There are 3 figures, and 5 references, 3 of which are Soviet, 1 English, and 1 Dutch.

ASSOCIATION: Byurakanskaya astrofizicheskaya observatoriya Akademii nauk Arm SSR (Byurakan Astrophysical Observatory of the Academy of Sciences of the Armenian SSR)

PRESENTED: March 7, 1958, by V.A. Ambartsumyan, Academician

SUBMITTED: February 3, 1958

1. Nebulae--Magnetic fields
2. Magnetic fields--Measurement
3. Nebulae--Magnetic moments
4. Dipole moments
5. Mathematics--Applications

Card 2/2

GURZADYAN, G.A.

PHASE I BOOK EXPLOITATION

SOV/4798

Akademiya nauk Armyanskoy SSR, Yerevan. Byurakanskaya observatoriya  
Sobshcheniya, vyp. 26 (Communications of the Byurakan Observatory of the Academy  
of Sciences of the Armenian SSR, No. 26) Yerevan, 1959. 82 p. 700 copies  
printed.

Resp. Ed.: Viktor Amazaspovich Ambartsumyan; Tech. Ed.: M.A. Kaplanyan.

PURPOSE: This publication is intended for astronomers and astrophysicists.

COVERAGE: This issue of the Communications of Byurakan Observatory contains  
articles dealing with the properties of stellar associations in spiral galaxies,  
investigations of planetary nebulae, and the instruments and techniques used in  
photometry. No personalities are mentioned. References follow each article.

TABLE OF CONTENTS:

Markaryan, B. Ye. Color and Radiance of Bright Stellar Associations of the  
Spiral Galaxies M51 and M101 3

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Communications of the Byurakan Observatory (Cont.)	SOV/4798
<u>Gurzadyan, G.A., and N.A. Razmadze. Polarimetric Investigation of the Planetary Nebula NGC 7026</u>	19
Arakelyan, M.A. Remarks on the Photometric System U, B, V	27
Mirzoyan, L.V., and E. Ye. Khachikyan. Investigation of the Comet Mrkos (1957 d.) I	35
Markaryan, B. Ye. Characteristic Features of the Distribution of Open Clusters in the Galaxy Plane	53
<del>Gurzadyan, G.A. Magnetic Drag in the Planetary Nebulae</del>	59
<del>Gurzadyan, G.A. Observations on One Application of the Electrophotometric Planimeter</del>	77
The author describes a new method of using an electrophotometric planimeter in the processing of microphotograms. The operating principle of this device is based on the measurement of the stream of light equivalent to the given plane. The advantage of this instrument, besides the simplicity and quickness of its operation, is its high precision (measurement error less than 1%) which, moreover, does not depend on the form and size of the measured surface. The efficiency of the proposed method may be increased	

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Communications of the Byurakan Observatory (Cont.)

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by using two sighting slits with different apertures consecutively, in order to reduce the fluctuation of background brightness. The method of two sighting slits can also be used in other fields of photometry, particularly in measuring star brightness by means of electrophotometry.

AVAILABLE: Library of Congress

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JA/dwm/mas  
2-27-61

GURZADYAN, G.A.

Luminosity of cometary nebulae. Soob.Biur.observ. no.27:73-121  
'59. (MIRn 14:9)  
(Nebulae)

.3.1550

67939

3 (+)  
AUTHOR:

Gurzadyan, G. A.

SOV/20-130-1-12/62

TITLE: Synchrotron Radiation in Cometary Nebulae

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 1, pp 47 - 50  
(USSR)

ABSTRACT: V. A. Ambartsumyan directed attention to the radiation mentioned in the title and showed that the luminosity of these objects is not of thermal nature. The luminosity of cometary nebulae may be due to bremsstrahlung of relativistic electrons in the magnetic fields of the nebula (synchrotron radiation). The investigation of this hypothesis is not limited to a simple calculation of the concentration of relativistic electrons and to the determination of the spectrum. The hypothesis of relativistic electrons obviously gives a good explanation of various facts on cometary nebulae. The present paper gives some results obtained by the author on this problem. Sometimes a projection of the same type of comet is observed on the rear of the cone of the cometary nebula (in symmetrical position to the nucleus) (e.g. with MCG 2261, 2245). Such a nebula has a peculiarly bipolar character. The lines of forces running from the pole to the side of the magnetic axis are approximately straight lines. The electrons

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Synchrotronic Radiation in Cometary Nebulae

SOV/20-130-1-12/60

departing from the pole at a certain angle towards the lines of force wind around them, thus describing a spiral trajectory. The radius of this trajectory is bound to increase with increasing distance from the pole. At a given value of its energy the electron emits invisible ultrashort waves in the ranges near the nucleus and invisible infrared and radio waves in the ranges which are remote from the nucleus. An electron of certain energy may therefore emit only at certain distances from the nucleus in the optical range. The brightness maximum may therefore be observed at any distance from the core according to the composition and the homogeneity of the beam of relativistic electrons. The irregular changes in brightness and in the structure of cometary nebulae have hitherto not been explained. The hypothesis of the electrons injected from the nucleus of the nebula explains this phenomenon simply and convincingly. An expression for the mean electron concentration  $N_e$  in the nebula is then computed. The hydrogen ions in cometary nebulae are ionized under the influence of the ultraviolet synchrotronic radiation produced in the nebula. Formulas for the concentration of (thermal) electrons and of neutral hydrogen atoms in the

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67939

Synchrotronic Radiation in Cometary Nebulae

SC7/20-130-1-12/69

nebula are derived and given. In NGC 2261 the majority of hydrogen atoms is in neutral state. At a given point synchrotronic radiation is bound to be polarized perpendicularly to the magnetic line of force, and the theoretical degree of polarization is ~70%. The results of the present paper are confirmed by investigations of polarization carried out by E. Ye. Khachikyan (Ref 3) and N. A. Razmadze (Ref 8) with NGC 2261. These authors observed radial polarization. The results of the polarimetric measurements indicate as well that the luminosity of cometary nebulae has the nature of a synchrotronic radiation. The hypothesis of synchrotronic radiation discussed here satisfactorily explains the other phenomena observed in cometary nebulae. There are 8 references, 6 of which are Soviet.

ASSOCIATION: Byurakanskaya astrofizicheskaya observatoriya Akademii nauk ArmSSR (Byurakan Astrophysical Observatory of the Academy of Sciences of the Armenian SSR)

PRESENTED: September 11, 1959, by V. A. Ambartsumyan, Academician

SUBMITTED: September 3, 1959  
See 1 3/3

67-18

3(+) 3.1530

SOV/20-130-2-12/69

AUTHOR: Gurzadyan, G. A.

TITLE: Electron Temperature of a Medium in the Case of Synchrotronic  
Radiation

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 2,  
pp 287 - 289 (USSR)

ABSTRACT: A synchrotronic radiation (bremsstrahlung of relativistic  
electrons in a magnetic field) is assumed to be emitted in  
the atmosphere or in a limited volume of the atmosphere of  
a star. Within the region of  $L_c$  - radiation (shorter than  
912 Å), the density of synchrotronic radiation is assumed to  
be considerably larger than the density corresponding to  
Planck's formula for the stellar temperature  $T$ .  
The present paper deals with the determination of the electron  
temperature of such a medium under the following conditions:  
a) The free electrons are formed by photoionization of the  
hydrogen atoms under the action of the short-wave synchrotronic  
radiation produced in the volume of the stellar atmosphere  
under consideration. b) The electrons lose their 4

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67558

Electron Temperature of a Medium in the Case of  
Synchrotronic Radiation

SOV/20-130-2-12/69

energy by recombination processes with hydrogen. c) The electrons have a Maxwellian velocity distribution. The solution of this problem is based upon two equilibrium conditions, i.e., a) the condition of steadiness: The number of atoms entering the continuum and emerging from it in photoionization must be equal. b) The condition of radiative equilibrium. Photoionization is assumed to take place only from the ground level. If  $N_e = KE^{-\gamma}$  holds for the continuous energy spectrum of the relativistic electrons,  $Q_\nu = \text{const.} \nu^{(1-\gamma)/2}$  holds for the density of the electrons produced in a magnetic field on the frequency  $\nu$  due to the slowing-down of the relativistic electrons. Next, formulas are derived for the number of recombinations and for the radiative equilibrium. According to the formulas derived, the electron temperature of the medium depends but little on the spectrum of the relativistic electrons  $\nu$  in the case of synchrotronic radiation. This temperature is fully determined by the luminosity mechanism of the medium. It follows that  $\check{4}$

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6.1.1.8

Electron Temperature of a Medium in the Case of  
Synchrotronic Radiation

SOV/20-130-2-12/69

$T_e = 110,000^{\circ}$  for  $\gamma = 3$  and  $T_e = 100,000^{\circ}$  for  $\gamma = 5$ . The theoretical electron temperature of the atmosphere (or part of it) or a star where synchrotronic radiation is produced is higher by one order of magnitude than the electron temperature of gaseous nebulae. Since the residual energy of the electron is sufficiently high after the photoionization of hydrogen, it may be consumed partly for the excitation and ionization of hydrogen atoms (which are in the ground state) through nonelastic collisions. Thus, the electron temperature of the medium may be slightly reduced. In conclusion, the author points out that it is possible to verify the theoretical conclusions discussed in the present paper on some nonsteady stars. There is 1 Soviet reference.

ASSOCIATION: Byurakanskaya astrofizicheskaya observatoriya Akademii nauk Arm SSR (Byurakan Astrophysical Observatory of the Academy of Sciences of the Armyanskaya SSR)

PRESENTED: September 11, 1959 by V. A. Ambartsoumyan, Academician ✓  
SUBMITTED: September 8, 1959

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83128  
S/020/60/133/005/005/019  
B019/B054

3.1570

AUTHOR: Gurzadyan, G. A.

TITLE: New Double-shell Planetary Nebulae ✓

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 5,  
pp. 1053 - 1055

TEXT: In the introduction, the author deals with the evolution of planetary nebulae of the type II into the type III. It is shown that the double-shell phase of a planetary nebula represents a transition stage from the planetary to the ring-shaped state. By checking the celestial atlas of the Palomar Observatory, it was possible to establish the existence of a second shell in 10 planetary nebulae which had hitherto been classified as planetary or ring-shaped nebulae. Table 1 shows the diameters of the two shells of these nebulae and the ratio of the two diameters to each other. Of special interest is nebula NGC 6543 indicated in Table 1 which had hitherto been classified as a spiral nebula. A photograph taken with the telescope described by Struve (Ref. 6) shows that this nebula has a very thin second shell of fibrous structure. ✓

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83128

New Double-shell Planetary Nebulae

S/020/60/133/005/005/019  
B019/B054

Nebula NGC 3587 has the lowest ratio of the two diameters of 1.16. It follows from the theory of evolution of double-shell nebulae that high diameter ratios of the two shells are due either to high temperatures in the nucleus of the nebula or to low propagation velocities of the shells. The author concludes that there exists a temperature of 60,000°C in the nucleus of nebula NGC 6543. From an extensive discussion of some further results the author concludes that every nebula is formed as one-shell nebula but later develops into a double-shell nebula. A footnote refers to the discovery of a second shell in nebula NGC 6853 by N. A. Razmadze with the aid of the large meniscus telescope of the Abastumanskaya observatoriya (Abastumani Observatory). There are 1 figure and 12 references: 5 Soviet.

ASSOCIATION: Byurakanskaya astrofizicheskaya observatoriya Akademii nauk ArmSSR (Byurakan Astrophysical Observatory of the Academy of Sciences of the Armyanskaya SSR)

PRESENTED: April 13, 1960, by V. A. Ambartsumyan, Academician

SUBMITTED: April 6, 1960

Card 2/2

GURZADYAN, G.A.

Possibility of observing gaseous nebulae in the Lyman alpha line.  
Dokl.AN SSSR 136 no.5:1055-1058 F '61. (MIRA 14:5)

1. Byurakanskaya astrofizicheskaya observatoriya Akademii nauk  
ArmSSR. Predstavлено акад. V.A. Ambartsumyanom.  
(Nebulae)

GURZADYAN, G.A.

Mechanism of the "splitting" of Lyman alpha quanta in nebulae.  
Dokl. AN SSSR 141 no.5:1061-1064 D '61. (MIRA 14:12)

1. Byurakanskaya astrofizicheskaya observatoriya AN Armyanskoy  
SSR. Predstavлено akademikom V.A. Ambartsumyanom.  
(Nebulae) (Quantum theory)

PHASE I BOOK EXPLOITATION

SOV/6148

Gurzadyan, Grigor Aramovich

Planetarnyye tumannosti (Planetary Nebulae). Moscow, Fizmatgiz, 1962.  
384 p. (Series: Problemy teoreticheskoy astrofiziki) 2,000 copies  
printed.

Editorial Board: V. A. Ambartsumyan, E. R. Mustel', A. B. Severnyy,  
and V. V. Sobolev; Ed.: G. S. Kulikov; Tech. Ed.: K. F. Brudno.

PURPOSE: This book is intended for astrophysicists.

COVERAGE: The book presents the advances made in the field of the physics  
and dynamics of planetary nebulae. Theoretical as well as observational  
material is reviewed. Nebulae are held to originate as single-envelope  
phenomena and end their lifespan as double-envelope phenomena. Plan-  
etary nebulae contain regular, relatively strong, magnetic fields which  
control their internal structure. No direct genetic relationship is  
believed to exist between planetary nebulae and novae or supernovae.  
The lifetime of planetary nebulae is a hundred thousand times shorter  
than that of ordinary stars. Planetary nebulae are the remnants of

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2

Planetary Nebulae

SCV/6148

star-formation processes. Every fiftieth star of the Galaxy is believed to have been at one time the nucleus of a planetary nebula. The author thanks V. A. Ambartsumyan, V. V. Sobolev, and A. B. Severnyy for their assistance. There are 207 references, of which 58 are Soviet.

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2. Structure of nebulae	12
3. Luminosity of nebulae and their nuclei	18
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6. Stratification of emission	29
7. Expansion of planetary nebulae	31

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GURZADYAN, G.A.

Effect of magnetic fields on the shape of planetary nebulae.  
Dokl. AN SSSR 144 no.5:1011-1014 Je '62. (MIRA 15:6)

1. Byurakanskaya astrofizicheskaya observatoriya AN Armyanskoy  
SSR. Predstavлено академиком V.A.Ambartsumyanom.  
(Magnetic fields) (Nebulae)

L 15714-65 EWT(1)/ENG(v)/EEC(t) Pe-5/Pae-2 AFETC/HSD-3/HSD(t)/AFETR GV

ACCESSION NR: AR4049319

S/0269/64/000/008/0033/0033

SOURCE: Ref. zh. Astronomiya. Otdel'nyy vyp., Abs. 8.51.239

AUTHOR: Gurzadyan, G. A.

B

TITLE: Development of the absorption lines of the Balmer series of hydrogen in the spectra of galaxies of the M82 type

CITED SOURCE: Soobshch. Byurakansk. observ., vyp. 34, 1963, 37-58

TOPIC TAGS: Balmer hydrogen series, absorption line, galactic spectrum, Interstellar hydrogen, color index, stellar ultraviolet radiation, Lyman alpha quantum, galactic optical thickness, synchrotron radiation, relativistic electron

TRANSLATION: The author notes the existence of galaxies (M 82, NGC 5195, NGC 205) which, on the basis of the absorption lines of the Balmer series of hydrogen in the spectrum, should be related to type A, whereas the color index corresponds to a later type: G or K. An attempt is made to explain the conditions under which the Balmer absorption lines of hydrogen can develop in the integral spectrum of a galaxy. It is shown that if the diameter of the galaxy is  $\sim 10,000$  parsecs, if the admissible density of interstellar hydrogen prevails and if it is assumed that the hydrogen is excited by the ultraviolet radiation of stars and Ly- $\alpha$  quanta emanating

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ACCESSION NR: AR4049319

from H II zones and by collisions, the optical thickness of a galaxy in the lines of the Balmer series is less than unity. If it is assumed that all interstellar hydrogen is in a state of weak ionization, a rather high value can be obtained for the density of Ly- $\alpha$  radiation and also a high  $n_2$  value ( $10^{-9}$ - $10^{-10}$  cm $^{-3}$ ), which is required for the formation of the absorption lines of the Balmer series of hydrogen. The author assumes that hydrogen ionization is produced by LC quanta of synchrotron radiation. In this case it must be assumed that in some galaxies there are extensive and quite uniform magnetic fields in which relativistic electrons move. It is possible to explain the spectrum of the galaxy M82 on this basis. To produce agreement between theoretical computations and observational data it is assumed that the relativistic electrons in this galaxy appeared as a result of some impulse phenomenon. Later, their quantity can decrease greatly, but at present interstellar hydrogen is in a state of de-excitation, which occupies a time of  $t \sim 10^{13}/n_e$  seconds. Bibliography of 19 items. A. Kurchakov.

SUB CODE: AA

ENCL: 00

Card 2/2

GURZADYAN, G.A.

Appearance of absorption lines of the Balmer hydrogen series  
in galactic spectra. Dokl. AN SSSR 152 no.6:1331-1334. 0 '63.  
(MIRA 16:11)

1. Byurakanskaya astrofizicheskaya observatoriya AN ArmSSR.  
Predstavleno akademikom V.A. Ambartsumyanom.

GURZADYAN, G.A.; OGANEZYAN, R.Kh.

Spectrophotometric measurements of hypothetical former nuclei  
of planetary nebulae. Soob. Biur. obser. no.35,43-58 '64.  
(MIRA 18:8)

GURZADYAN, G.A.

Photometric data for some double-envelope planetary nebulae.  
Soob. Biur. obser. no.35:59-70 '64. (MIRA 18:8)

L 24807-65 FBD/EWT(1)/EWT(m)/EWT(v)/FCC/EEC-4/EEC(t)/EWA(h) Fe-5/Po-4/Pl-4/  
Pq-4/Pac-2/Peb DIAAP/AFETR/ESD(gs) QW/WS

ACCESSION NR: AP4048031

S/0020/04/168/006/1801/1294

44

43

6

AUTHOR: Gurzadyan, G. A., Ambartsumyan, V. A. (Academician)

TITLE: The possibility of X radiation from cosmic radio sources

SOURCE: AN SSSR. Doklady\*, v. 158, no. 6, 1964, 1291-1294

TOPIC TAGS: radioastronomy, radio source, X-ray source, bremsstrahlung, synchrotron radiation, nebula radiation

ABSTRACT: In connection with the development of observations outside the atmosphere in the region of the far ultraviolet, the author considers the problem of a preliminary estimation of the radiation from celestial objects (galaxies, nebulae, etc.) in the X-ray range (1 - 100 Å). In the author's opinion, the following two mechanisms for the generation of X radiation in the case of celestial bodies are of the greatest practical interest, and are therefore discussed in this paper: 1) the bremsstrahlung of relativistic electrons in the magnetic fields of the medium; 2) the bremsstrahlung of the non-relativistic electrons in the field of the proton (atomic nuclei). The author points out that in the case of bremsstrahlung by relativistic electrons, the generation of X rays in the 1 - 100 Å band will be caused by electrons having an energy in the order of  $10^{13} - 10^{14}$  ev with a magnetic field strength of  $H \sim 10^{-4} - 10^{-5}$  gauss. Assuming that the energy spectrum of the relativistic electrons

Cord 1/3

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ACCESSION NR: AP4048031

responsible for the occurrence of synchrotron radiation in the optical band does not break off in the object under consideration and at the given moment before energies of at least  $10^{13} - 10^{14}$  ev, the author determines the spectrum and the power of the X radiation generated under these conditions (which he calls "X radiation of synchrotron origin"). It is shown that, in the absence of absorption within the object radiating the X-rays, the intensity is inversely proportional to frequency, while the quantity of X-rays observed in a unit wavelength interval is constant and independent of wavelength. Attention is called to the fact that a characteristic feature of objects of the type of our galaxy (from the point of view of the structure of the interstellar medium) is its practical transparency in the region of short X-rays (1 - 10 Å); however, as the wavelength grows longer, the optical density rapidly increases, reaching 100 at  $\lambda \sim 100$  Å. A table is given in the article showing the calculated quantity of X-ray quanta (quanta/cm<sup>2</sup>/sec · Å) reaching the Earth from M82 and the Cancer nebula. The author shows how absorption both in the object itself and during the passage of the X-rays through our galaxy greatly changes the picture obtained when such absorption is not taken into account. By way of illustrating this point, a calculation is made of the anticipated quantity of X-ray quanta reaching the Earth in 1 second on 1 square centimeter from the known irregular galaxy M82. It is found that the expected radiation capability of M82 and the Cancer nebula in the X-ray range is very small (in comparison with the Sun) —

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ACCESSION NR: AP4048031

only a few score quanta per second per 1 cm<sup>2</sup>, but is still within the sensitivity range of the best X-ray detectors. The second mechanism for X-ray generation — the bremsstrahlung of non-relativistic (but fast) electrons in the proton field — operates, in the opinion of the author, most effectively with electron energies of  $10^2 - 10^4$  ev. With regard to galaxies and nebulae, the possibility of this mechanism depends primarily on the concentration in them of electrons with these energy levels. A calculation is made of the approximate order of this concentration and it is found that it is unlikely that the mechanism of the deceleration of fast electrons in the proton field plays a perceptible role in the generation of X-rays in conventional and radio galaxies and in the remnants of supernovae. Orig. art. has: 12 formulae, 2 figures and 2 tables.

ASSOCIATION: Byurakan astrophysical observatory Akademii nauk Arm. SSR  
(Byurakan Astrophysical Observatory, Academy of Sciences, Armenian SSR)

SUBMITTED: 18May64

ENCL: 00

SUB CODE: AA

NO REF SOV: 004

OTHER: 004

Card 3/3

L 21775-66

ACC NR: AP6002589

SOURCE CODE: UR/0286/65/000/023/0085/0086

19  
8

AUTHOR: Gurzadyan, G. A.

ORG: none

TITLE: Light filter. Class 57, No. 176801

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 85-86

TOPIC TAGS: light filter, uv filter, Lyman series

ABSTRACT: This Author Certificate presents a light filter containing a cylindrical cell filled with a filtering substance. The end surfaces of the filter serve as plane-parallel plates. To select the Lyman alpha line of the hydrogen spectrum, the plane-parallel plates are made of lithium fluoride. The plates are irradiated beforehand with hard radiation, coated with a layer of an alkali element, e.g., lithium, and protected with a layer of lithium fluoride. Molecular oxygen is used as the filtering substance.

SUB CODE: 20/ SUBM DATE: 22Nov62

Card 1/1 UL

UDC: 535.345.6

2

GURZADYAN, G. A.

Electron temperature gradient in gaseous nebulae. Trudy Astrofiz.  
inst. AN Kazakh. SSR 5:269-273 '65.

(MIRA 18:6)

GURZADYAN, G.A.

Electron temperature and electron concentration of the planetary nebula IC 4997. Astrofizika 1 no.2:225-228 Je '65.  
(MIRA 18:10)

1. Byurakanskaya astrofizicheskaya observatoriya.

L 11813-66 EWT(1) GW  
ACC NR: AP6003483

SOURCE CODE: UR/0020/66/166/001/0053/0056

AUTHOR: Gurzadyan, G. A.

51  
B

ORG: Byurakan Astrophysical Observatory, Academy of Sciences, ArmSSR  
(Byurakanskaya astrofizicheskaya observatoriya Akademii Nauk ArmSSR)

TITLE: On the generation of continuous emission from cool stars

SOURCE: AN SSSR. Doklady, v. 166, no. 1, 1966, 53-56

TOPIC TAGS: ~~continuous emission, phenomenon, cool star, ultraviolet range, ultra-violet quantum, infrared quantum, electron energy, stellar photosphere, star type, stellar radiation, UV radiation, IR radiation~~

ABSTRACT: The phenomenon of continuous emission from cool stars appears as a sudden and great increase of the star brightness in the ultraviolet range of the spectrum. This phenomenon is intrinsic in G, K, and M stars.<sup>55</sup> The brightness of the star increases tens or hundreds of times during the flash. The duration of the flash lasts from seconds to months or years. These stars have few quanta in the short-wave range and a great number of quanta in the infrared range. An especially rapid fall of ultraviolet quanta is noted with a decrease in the effective temperature. The transition of infrared quanta to high-frequency quanta causes the short-wave radiation to increase tens or hundreds of times. A theoretical formula is developed to explain this transition. It is assumed that electrons of energies of  $10^6$  ev are ejected from the inner part of the star into its photosphere. A layer of these elec-

UDC: 523.872

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L 11813-66

ACC NR: AP6003483

trons changes the initial Planck's spectrum of the photosphere. This phenomenon increases the short-wave radiation and decreases the infrared radiation. A graph in the original article represents the assumed change of wavelength. A theoretical formula is developed for the spectrum of the flash, and the change of the stellar magnitude is computed for three spectral ranges. Orig. art. has: 3 figures, 1 table, and 3 formulas. [EG]

SUB CODE: 03/ SUBM DATE: 27Apr65/ ORIG REF: 001/ OTH REF: 006/ ATD PRESS: 4/79

*beh*  
Card 2/2

L 22965-66 EWA(h)/EWT(l)/FCC GW

ACC NR: AP6008039

SOURCE CODE: UR/0020/66/166/004/0821/0824

33

B

AUTHOR: Gurzadyan, G. A.

ORG: Byurakan Astrophysical Observatory, Academy of Sciences ArmSSR (Byurakansskaya astrofizicheskaya observatoriya Akademii nauk ArmSSR)

TITLE: Flare stars as possible sources of cosmic rays

SOURCE: AN SSSR. Doklady, v. 166, no. 4, 1966, 821-824

TOPIC TAGS: variable star, cosmic ray, helium

ABSTRACT: Grounds for believing that flare stars may be a source of cosmic rays lie in the appearance of the 4686 Å emission line of doubly ionized He from some flares. This means that at the time of the flare the stellar atmosphere either has ionizing radiation (shorter than 228 Å) of sufficient strength (if the ionization of He is caused by photons) or has particles (electrons) of equivalent energy (if the ionization is caused by collision). To test this, the author examines the energy distribution curves in the continuous spectrum of an M5 flare star at values of  $\mu^2$  of 50 and 100 ( $\mu = E/mc^2$ ). The value for  $\mu^2 = 100$  appears very favorable. Theoretical spectra are then computed for values of  $\mu^2$  from 300 to 3000 in the x-ray range. These curves show that at  $\mu^2 = 300$  (electron energy of about  $10^7$  ev) an appreciable proportion of the infrared quanta from the star is in the zone of x-rays

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UDC: 523.872

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L 22965-66

ACC NR: AP6008039

( $\lambda \sim 50 \text{ \AA}$ ). With increasing  $\mu^2$  the wavelength diminishes, till at 3000 (electron energy of about  $2.8 \cdot 10^7$  ev) the maximum is at about  $\lambda = 5 \text{ \AA}$ . Considering the distance to the flare star, it is calculated that on an average the earth may receive about 3 quanta /cm<sup>2</sup> sec from such a star, and this is within the sensitivity range of our x-ray detectors. This paper was presented by Academician V. A. Ambartsumyan on 17 June 1965. Orig. art. has: 2 figures, 1 table, and 7 formulas.

SUB CODE: 04, 03/ SUBM DATE: 13Jun65/ ORIG REF: 002/ OTH REF: 003

Card 2/2 10

REF ID: A950220

ACQ NR: A950220

SOURCE CODE: UR/0269/65/000/003/001/0026

AUTHOR: Gurzadyan, G. A.

TITLE: Photometric data on some double-shell planetary nebulae

SOURCE: Ref. zh. Astronomiya, Abs. 8.51.242

REF SOURCE: Soobshch. Byurakansk. observ., vyp. 35, 1964, 59-70

TOPIC TAGS: celestial mechanics, descriptive astronomy, nebula, astrophysics, photographic astronomy

ABSTRACT: Data was obtained on the mass and expansion of double-shell planetary nebulae. With the help of a Schmidt 40" telescope, the Byurakan observatory provided the data on NGCs 6720, 6804, 6826, 7293; for NGC 6543, the ratio between the masses of the inner and outer shells,  $M_2/M_1$ , was determined by evaluating their brightness on a map of the Palomar atlas. A method was designed for estimating the effect of heterogeneities in the shell. A discussion is given on the physical conditions under which a planetary nebula may split into two parts, almost equal in mass. A calculation was made of the expected relative velocity of the withdrawal of the second  $\Delta v_2$  shell from the basic, when  $M_2/M_1 = 1$ , and at different temperature values of

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UDC 523.852.22

L 29439-66

ACC NR AR5022990

the nucleus and radius. A calculation was made for  $\Delta v_2$ , at different values of  $M_1/v_1$ , and it was pointed out that there must be a great dispersion of velocities in the expanding outer shells. The conclusion is supported by a great spread in the values of  $\Delta v_2$ , computed for nine nebulae. In order to verify the author's "theory of the detachment" of the outer shell, it is necessary to determine by direct calculations the expansion velocity of the outer shell for at least one or two nebulae. Orig. art. has: 5 references. G. Ponomareva

SUB CODE: 03/ SUEN DATE: none

Card 2/2 5/

L 37640-66

ACC. NR: AP6011245

SOURCE CODE: UR/0413/66/000/006/0088/0088

INVENTOR: Gurzadyan, G. A.; Novikov, V. M.

ORG: none

16

R

TITLE: Preparation of a light filter. Class 42, No. 179961

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 6, 1966, 88

TOPIC TAGS: light filter, ultraviolet spectrum

ABSTRACT: An Author Certificate has been issued for describing a method of preparing a light filter for the far-ultraviolet region of the spectrum by vacuum deposition of an alkaline metal on a plate-like transparent base. The deposited layer is covered with a second protective plate. To prevent oxidation of the alkaline metal deposit, the second plate is applied in vacuo; circular seals are inserted between both plates; the plates are compressed, and the space between them is made completely airtight.

[LD]

SUB CODE: 20/ SUBM DATE: 30May64

Card 1/1 vmb

UDC: 535.345.6

ACC NR: AP6024026

SOURCE CODE: UR/0252/66/042/001/0015/0018

AUTHOR: Gurzadyan, G. A. (Corresponding member AN ArmSSR); Novikov, V. M.

ORG: Byurakan Astrophysical Observatory Branch, Academy of Sciences, Armenian SSR  
(Filial Byurakanskoy astrofizicheskoy observatorii Akademii nauk Armyanskoy SSR)

TITLE: Light filters for the ultraviolet region of the spectrum, made of thin layers of alkaline metals

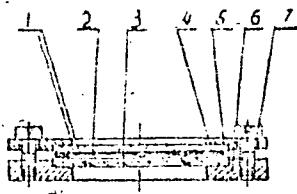
SOURCE: AN ArmSSR. Doklady, v. 42, no. 1, 1966, 15-18

TOPIC TAGS: sodium, potassium, rubidium, uv filter, metal film, optic transmission

ABSTRACT: The authors report a method, for which an Author's Certificate was awarded (no. 179961 of 30 January 1965), for producing filters by evaporating in vacuum a film of sodium, potassium, and rubidium on a polished plate of crystalline LiF and subsequently hermetically sealing the metal with a second polished plate of LiF and a ring gasket made of polyethylene or teflon (Fig. 1). The filters

Fig. 1. Construction of light filter. 1,3 - plane-parallel LiF plates, 2 - alkaline metal film, 4 - teflon ring gasket, 5,6 - stainless steel frame, 7 - screw

manufactured in this manner make it possible to isolate individual spectral regions in the 1000 - 3000 Å range. The



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